ZooKeys 212: 81–89 (2012)
doi: 10.3897/zookeys.212.3329
www.zookeys.org

RESEARCH ARTICLE

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A new species of the genus *Microtendipes* Kieffer, 1915 (Diptera, Chironomidae) from Oriental China

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Academic editor: *Torsten Dikow* | Received 4 May 2012 | Accepted 23 July 2012 | Published 30 July 2012

urn:lsid:zoobank.org:pub:050467C5-2D73-4DED-A108-67B6819D9080

Citation: Qi X, Lin XL, Wang XH(2012) A new species of the genus *Microtendipes* Kieffer, 1915 (Diptera, Chironomidae) from Oriental China. ZooKeys 212: 81–89. doi: 10.3897/zookeys.212.3329

Abstract

A new species of the genus *Microtendipes* Kieffer, 1915, *M. zhejiangensis* **sp.n.**, is described, and its morphological description and illustrations are given. A catalogue of the genus in Oriental Region is provided and a key to the males of *Microtendipes* in the Oriental Region is given.

Keywords

Microtendipes, new species, key, catalogue, Oriental Region

Introduction

Microtendipes Kieffer, 1915 is a cosmopolitan genus, occurring in all zoogeographical regions. Immature stages of *Microtendipes* are found in littoral and sublittoral sediments of large water bodies, with a few species occurring in running water (Ashe et al. 1987; Cranston et al. 1989). So far, there are 61 species recorded around the word.

The Oriental Region includes all of Asia south and east of the Himalayan Mountains (India and South East Asia), as well as southern China and the Islands

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of Southwestern Japan, Indonesia and Philippines. There was no catalogue of *Microtendipes* for the Oriental Region before this work, some previous records of Oriental *Microtendipes* are as follows: Kieffer (1921) recorded two new species based on the females, *M. stictopterus* Kieffer, 1921 from Philippines and *M. dimidiatus* Kieffer, 1921 from Taiwan Province (China), but Edwards (1929a) reviewed the Chironomidae from Philippines and recorded that the type specimen of *M. stictopterus* in Kieffer (1921) was too damaged for determination, *M. stictopterus* has been treated as nomen nudum; Reiss (1997) recorded *M. schuecki* Reiss, 1997 from Thailand; Chaudhuri et al. (2001) listed *M. callicomus* (Kieffer, 1911) from the Indian subcontinent, but *M. callicomus* ought to be treated as *Chironomus callicomus*; Wang (2000), Qi and Wang (2006) and Qi and Wang (2010) recorded 8 species of *Microtendipes* from Oriental China; Sasa and Suzuki (2000) recorded *M. iriocedeus* Sasa & Suzuki, 2000 from Southwestern Japan (Iriomote Island); Kikuchi and Sasa (1990) recorded *M. tobaquintus* Kikuchi & Sasa, 1990 from Indonesia (Toba Lake).

In this contribution, a new species of *Microtendipes* from Oriental China is described; the type localities map of the genus *Microtendipes* in Oriental China is given (Fig. 1); a catalogue and a key to the species of *Microtendipes* from the Oriental Region are presented.

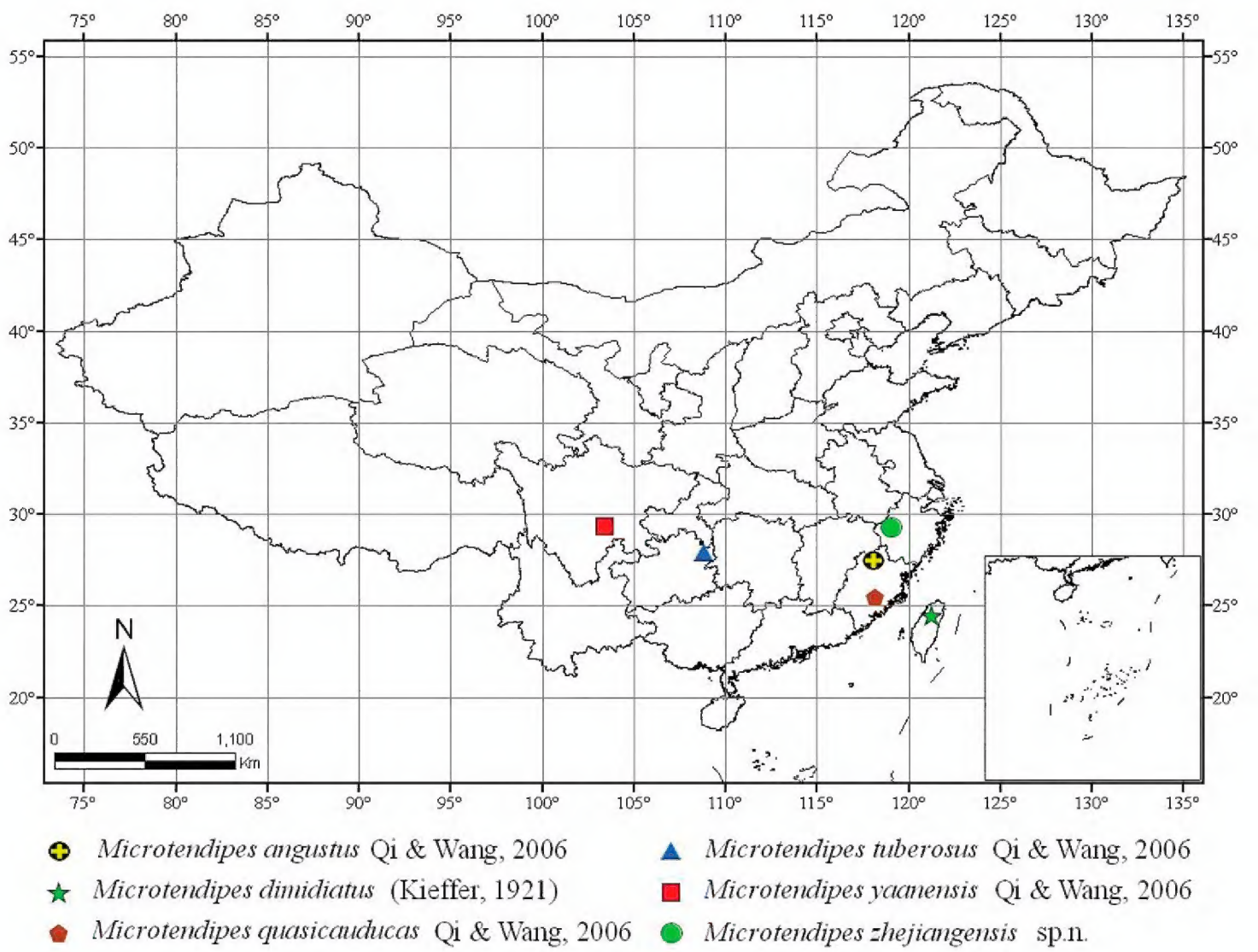


Figure 1. The type localities map of the genus *Microtendipes* in Oriental China.

Materials and methods

The morphological nomenclature follows Sæther (1980) and the abbreviations of parts measured follow Qi et al. (2012). The material examined was mounted on slides, following the procedure outlined by Sæther (1969). Specimens are deposited in the College of Life Science, Nankai University, China and College of Life Science, Taizhou University, China.

Taxonomy

Genus *Microtendipes* Kieffer, 1915

http://species-id.net/wiki/Microtendipes

Microtendipes Kieffer, 1915: 70; Pinder 1978: 128; Qi and Wang 2006: 37.

Type species. *Tendipes abbreviatus* Kieffer, 1913 [= *Chironomus chloris* (Meigen, 1818)]

Diagnosis. Most males of *Microtendipes* can be distinguished from all other Chironomini by one or two rows of stout, proximally directed setae on the fore femur. Additionally, the hypopygium of some species generally has a tubercle or wart-shaped median volsella often bearing a tuft of long setae. Species without the above characters require association with immature stages for correct placement in the genus; moreover, *Microtendipes* can be divisible into two species-groups (*pedellus* group and *rydalensis* group) with recourse to immature stages. The characters of larva are as follows: the body is large, red to orange coloured, up to 15 mm long; the antenna has 6 segments; the lauterborn organs alternate on apices of segments 2 and 3; the mandible has 3 inner teeth; the median trifid is either pale or as dark as remaining teeth with very small median tooth (maybe absent); the lateral and ventral tubules are absent.

Distribution. Palaearctic, Oriental, Nearctic, Neotropical and Australian regions.

A catalogue of *Microtendipes* in Oriental Region

***Microtendipes angustus* Qi & Wang, 2006**

Microtendipes angustus Qi & Wang, 2006: 38.
Oriental China (Fujian, Guizhou Province).

***Microtendipes britteni* (Edwards, 1929)**

Chironomus (*Microtendipes*) *britteni* Edwards, 1929b: 399.
Microtendipes britteni (Edwards): Pinder 1978: 128; Wang 2000: 645; Qi and Wang 2006: 40; Qi and Wang 2010: 497.
Oriental China (Guangdong, Guizhou, Zhejiang Province)

***Microtendipes chloris* (Meigen, 1818)**

Chironomus chloris Meigen, 1818: 28

Microtendipes chloris (Meigen): Pinder 1978: 128; Qi and Wang 2010: 497.

Oriental China (Zhejiang Province)

***Microtendipes dimidiatus* (Kieffer, 1921)**

Chironomus (*Microtendipes*) *dimidiatus* Kieffer, 1921: 581

Oriental China (Taiwan Province)

***Microtendipes iriocedeus* Sasa & Suzuki, 2000**

Microtendipes iriocedeus Sasa & Suzuki, 2000: 3, 12.

Southwestern Japan (Iriomote Island)

***Microtendipes pedellus* (De Geer, 1776)**

Tipula pedellus De Geer, 1776: 378

Chironomus aberrans Johannsen, 1905: 221

Microtendipes pedellus (De Geer): Edwards 1929b: 397 ; Wang 2000: 645; Qi and Wang 2006: 41.

Oriental China (Guizhou, Zhejiang Province); South India

***Microtendipes quasicauducas* Qi & Wang, 2006**

Microtendipes quasicauducas Qi & Wang, 2006: 41.

Oriental China (Fujian Province)

***Microtendipes schuecki* Reiss, 1997**

Microtendipes schuecki Reiss, 1997: 271.

Thailand (DoI Inthanon)

***Microtendipes tobaquintus* Kikuchi & Sasa, 1990**

Microtendipes tobaquintus Kikuchi & Sasa, 1990: 301.

Indonesia (Toba Lake)

***Microtendipes truncatus* Kawai & Sasa, 1985**

Microtendipes truncatus Kawai & Sasa, 1985: 18; Qi and Wang 2006: 43.

Oriental China (Zhejiang, Fujian, Guizhou, Yunnan Province)

***Microtendipes tuberosus* Qi & Wang, 2006**

Microtendipes tuberosus Qi & Wang, 2006: 43.

Oriental China (Guangdong, Guizhou, Hainan Province)

***Microtendipes yaanensis* Qi & Wang, 2006**

Microtendipes yaanensis Qi & Wang, 2006: 45; Qi and Wang 2010: 497.

Oriental China (Zhejiang, Sichuan Province)

Key to males of the genus *Microtendipes* in Oriental region[#]

1	Hypopygium with median volsella	**2**
–	Hypopygium without median volsella	**7**
2	Superior volsella with lateral lobe	**3**
–	Superior volsella without lateral lobe	**5**
3	Wing with dark markings	***M. schuecki***
–	Wing transparent, without markings	**4**

4	Front femur with small tubercle	***M. tuberosus***
–	Front femur without small tubercle	***M. yaanensis***
5	Anal point subtriangular	***M. pedellus***
–	Anal point parallel sided	**6**
6	Superior volsella hook-like	***M. chloris***
–	Superior volsella broad, rounded apically	***M. truncatus***
7	Inferior volsella abruptly narrowed in apical half	**8**
–	Inferior volsella digitiform	**9**
8	Anal point apically slightly swollen and rounded; superior volsella with 4 dorsal setae, 2 basal setae	***M. angustus***
–	Anal point parallel-sided, slender, apex rounded; superior volsella with 7–10 dorsal setae, 4 long basal setae	***M. zhejiangensis* sp.n.**
9	Wing with dark markings	***M. quasicauducas***
–	Wing transparent, without markings	**10**
10	Abdominal tergite VIII narrowed at base, as inverted V-shaped	***M. iriocedeus***
–	Abdominal tergite VIII not narrowed at base	**11**
11	Anal point parallel-sided, slender, apex rounded	***M. tobaquintus***
–	Anal point subtriangular, with pointed apex	***M. britteni***

The record of *M. dimidiatus* was only based on female, so the key does not include it.

***Microtendipes zhejiangensis* sp.n.**
urn:lsid:zoobank.org:act:96DD36A0-80C8-4175-9F46-33AC31F7E6B4
http://species-id.net/wiki/Microtendipes_zhejiangensis
Figs 2–5

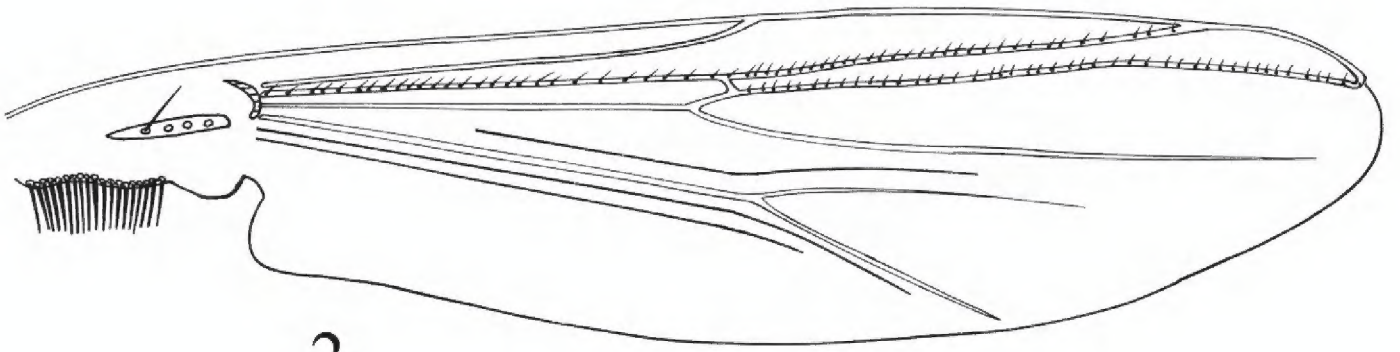
Diagnosis. The male imago can be distinguished from known species of the genus by the following combination of characters: superior volsella hook-like, apex obtuse, with 7–8 dorsal setae and 4 long basal setae; median volsella absent; absence of pigment marks in wing; acrostichals 2–3.

Description. Male imago (n = 3). Total length 5.75–6.05 mm. Wing length 3.38–3.48 mm. Total length/wing length 1.65–1.79. Wing length/length of profemur 2.25–3.71.

Coloration. Head yellow. Thorax greenish yellow with scutum and postnotum brown. Abdomen greenish yellow, Abdominal tergites I–VI pale green, tergites VII–IX and hypopygium brown. Legs: apical 1/3 of fore femur, basal 1/2 of fore tibia and apical 1/10 of tibiae brown; remaining parts greenish yellow.

Head. AR 1.82–2.48. Temporal setae 16–19 including 6–8 inner verticals, 6–10 outer verticals, and 2–3 postorbitals. Clypeus with 37–38 setae. Tentorium 205–240 mm long, 55–70 mm wide. Palpomere lengths (in mm): 60–65, 63–73, 310–330, 330–350, 460–480. L: $5^{th}/3^{rd}$ 1.39–1.54.

Wing (Fig. 2). VR 1.07–1.13. B with 4 setae; R with 27–28, R_1 with 24–32, R_{4+5} with 31–49 setae. Squama with 18–20 setae.



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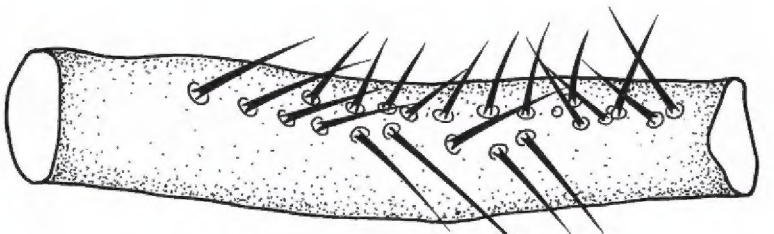

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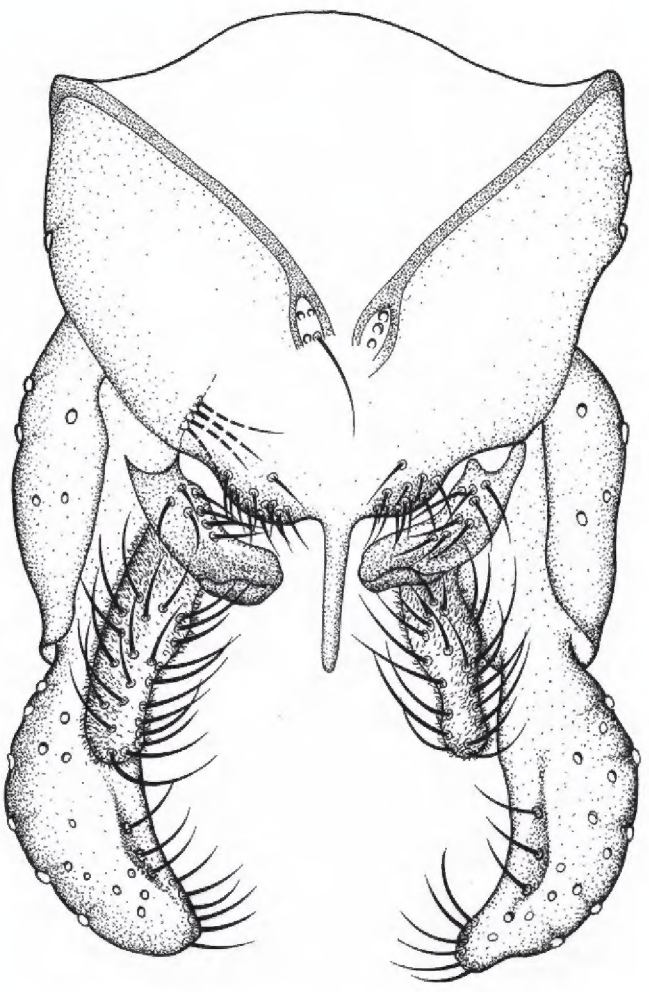

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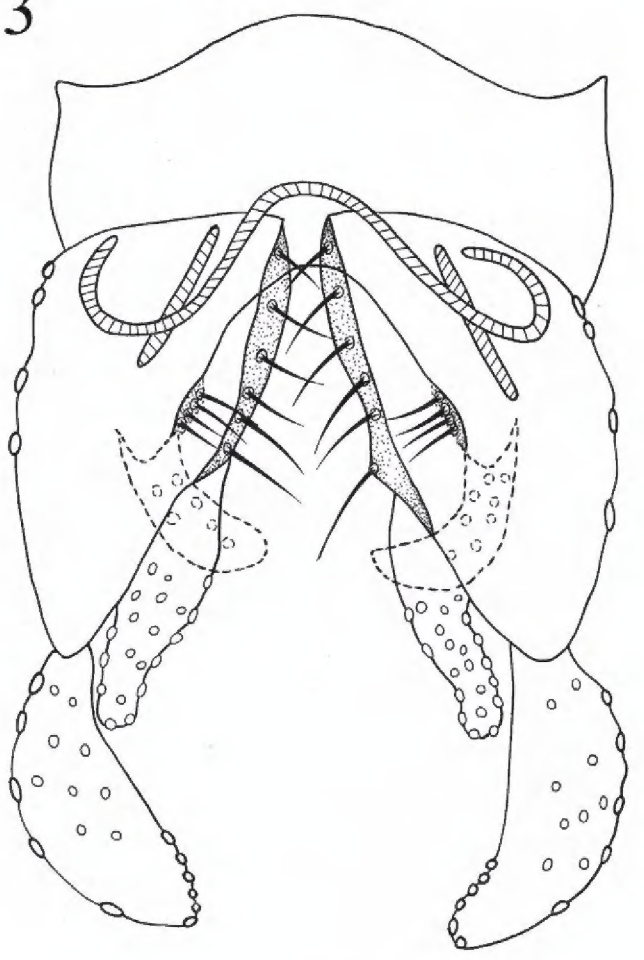

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Figures 2–5. *M. zhejiangensis* sp.n., male. **2** wing **3** two rows of directed setae in front femur **4** hypopygium (dorsal view) **5** hypopygium (ventral view).

Thorax. Dorsocentrals 17, acrostichals 2–3, prealars 4. Scutellum with 10–25 setae.

Legs (Fig. 3). Distal half of front femur with 23–25 proximally directed setae in 2 rows, 180–200 mm long. Spur on median tibiae 25–33 mm long including 28–30 mm long comb, unspurred comb 25–33 mm long; spur on posterior tibia 33–40 mm long including 25–33 mm long comb, unspurred comb 28–30 mm long. Width at apex of front tibia 80–87 mm, of middle tibia 83–85 mm, of hind tibia 90–95 mm. Lengths (in mm) and proportions of legs in Table 1.

Table I. Lengths (in μm) and proportions of legs of *Microtendipes zhejiangensis* sp.n. (n = 3).

	P_1	P_2	P_3
fe	1375–1500	1625–1700	1875–1875
ti	1550–1700	1525–1575	1700–1800
ta_1	1900–2075	1025–1100	1250–1300
ta_2	875–975	525–550	750–825
ta_3	875–950	420–450	575–600
ta_4	775–825	275–290	350–360
ta_5	325–350	150–150	150–160
LR	1.21–1.22	0.68–0.72	0.71–0.72
BV	1.70–1.72	3.00–3.04	2.52–2.64
SV	1.54–1.55	2.93–3.05	2.83–2.90
BR	2.21–2.50	3.40–3.75	2.67–4.75

Hypopygium (Figs 4–5). Anal point 78–90 mm long, parallel-sided, slender, apex rounded. Tergite IX with 6–9 long setae medially and 22–36 setae along posterior margin. Phallapodeme 90–113 mm long; transverse sternapodeme 50–70 mm long. Gonocoxite 223–238 mm long. Superior volsella 105–125 mm long, hook-like, apex obtuse, with 7–10 dorsal setae and 4 long basal setae. Inferior volsella digitiform, 110–140 mm long, narrowed in apical 1/2, with 29–32 setae. Gonostylus 143–148 mm long, with 9–10 setae along inner margin in distal 1/2. HR 1.51–1.64, HV 4.08–4.32.

Female, pupa and larva are unknown.

Type materials. Holotype: 1♂, China, Zhejiang: Kaihua County, Gutian Mountain, 29°14.27'N, 118°07.13'E, 7.iv.2011, Lin XL, sweeping method. Paratype: 2♂♂, same as holotype.

Etymology. The species is named after the type locality, using the Latin suffix *–ensis*, denoting place of origin.

Remarks. The new species is similar to *M. pedellus* (De Geer), but can be separated from *M. pedellus* (De Geer) on the basis of the following: (1) presence of median volsella in *M. pedellus* (De Geer), with 3 long setae in the median volsella; whereas absence of median volsella in *M. zhejiangensis* sp.n.; (2) the inferior volsella of *M. pedellus* (De Geer) digitiform, with 20 setae, whereas the inferior volsella of *M. zhejiangensis* sp.n. narrowed in apical 1/2, with 29–32 setae; (3) HV of *M. pedellus* (De Geer) 2.98–3.36, whereas HV of *M. zhejiangensis* sp.n. 4.08–4.32.

The new species is also similar to *M. nitidus* (Meigen, 1818). The superior volsella of *M. nitidus* (Meigen) has a basal expansion bearing more than 5 long setae mesally, but the superior volsella of *M. zhejiangensis* sp.n. is not expanded basally, with 4 long basal setae separated from each other.

This new species can be separated from *M. quasicaducas* Qi & Wang on the basis of the following characters: (1) the anal point of *M. quasicaducas* Qi & Wang slender, tapering from base, and apically pointed; whereas the anal point of *M. zhejiangensis* sp.n. parallel–sided, slender, apex rounded; (2) the wing with pigment marks in *M. quasicaducas* Qi & Wang, but the wing without marks in *M. zhejiangensis* sp.n.; (3) the

acrostichals 2–3 in *M. zhejiangensis* sp.n., whereas the acrostichals of *M. quasicaducas* Qi & Wang lacking.

This new species can also be separated from *M. zhamensis* Qi & Wang, 2006 on the basis of the following characters: (1) the anal point of *M. zhamensis* Qi & Wang slender, pointed; whereas the anal point of *M. zhejiangensis* sp.n. parallel-sided, slender, apex rounded; (2) presence of median volsella in *M. zhamensis* Qi & Wang, with 2 setae in median volsella; absence of median volsella in *M. zhejiangensis* sp.n.; (3) the inferior volsella of *M. zhamensis* Qi & Wang digitiform, with 24 setae; whereas the inferior volsella of *M. zhejiangensis* sp.n. narrowed in apical 1/2, with 29–32 setae; (4) the acrostichals 2–3 in *M. zhejiangensis* sp.n., whereas the acrostichals of *M. zhamensis* Qi & Wang lacking.

Distribution. The species is known from Zhejiang Province of China.

Acknowledgements

Financial support from the Zhejiang Provincial Natural Science Foundation of China (Y3100486, Y3110395), the National Natural Science Foundation of China (NSFC, grant No. 30570207, J0630963), Fauna of China (FY120100) and the Science Foundation of Taizhou University (No. 2012QN18) are acknowledged with thanks.

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